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Synthesis of Tetranuclear Palladium(II) Complexes and Their Catalytic Activity for Cross-Coupling Reactions

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Abstract

© 2017 Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim We have developed a short and simple synthesis of tetranuclear palladium(II) complexes that have been structurally confirmed by X-ray analysis. These complexes were formed in about 30 % overall yield by spontaneous metalation of dimethylaminoarene derivatives and exhibit a high stability. We have studied the utility of the tetranuclear palladium(II) complexes as precatalysts for Mizoroki–Heck and Suzuki–Miyaura cross-coupling reactions. Our novel complexes show excellent catalytic activities with high turnover numbers (TON) and high turnover frequencies (TOF) (e.g., for the Suzuki–Miyaura reaction: TON up to 538000 and TOF up to 23400 h −1 at room temperature).

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Keywords

catalysis, Mizoroki–Heck coupling, palladacycles, Suzuki–Miyaura coupling, X-ray diffraction

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